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ABSTRACT

Four commercial test preparation programs were evaluated for their effectiveness in increasing scores of elementary school student on standardized multiple-choice tests. Focus was on determining whether: formal training increases students' test-taking skills, students can generalize the test wiseness strategies to improve their scores on standardized tests, and increased knowledge of how to take tests reduces students' test anxiety. "Scoring High" (Random House), "Improving Test-Taking Skills" (Riverside), "On Target for Tests" (Continental Press), and "Reading Skills for Standardized Testing" (Hammond) were compared with no formal test wiseness instruction, using about 12,000 students in grades 2 through 8. The reading comprehension subtest of the Iowa Tests of Basic Skills was used to determine if such instruction improved the students' performance on standardized tests. A Test-Taking Survey, Test Anxiety Survey, and Teacher Survey were developed for the study. Although teachers usually liked the instructional packages, no decisive differences were found between those who received test taking instruction and those who did not. Teachers apparently gave informal test wiseness instruction; the comparison group was therefore not a valid control. No recommendation could be made for purchases of these packaged programs. Six graphs and seven tables are provided. (SLD)

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Department of Research and Evaluation

Bureau of ECIA Program Evaluation

A Comparison of the Effectiveness of Four Test Preparation Programs

Final Evaluation Report

BEST COPY AVAILABLE

Chicago Public Schools

Manford Byrd, Jr.
General Superintendent of Schools

June 1987

TM 012 117

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EXECUTIVE SUMMARY

The Chicago Public Schools piloted a program during the 1985-86 school year to determine if direct instruction in test-taking skills such as educated guessing, time usage, and recognition of context clues would enable students to increase their scores on standardized, multiple-choice tests. More than 40 Chicago public schools participated in the pilot study using four different commercial test preparation packages. This report examines the effects of this instruction. Specifically, the evaluation addresses three questions:

1. Did formal training increase students' test-taking skills?

2. Were students able to generalize the testwiseness strategies to improve their scores on standardized exams?

3. Did increased knowledge of how to take tests reduce students' test anxiety?

In addition, the study was designed to look at the possibly differential effectiveness of four commercial test preparation packages.

Approximately 12,000 students from 475 classes were involved in the study. Principals at schools in Districts 4 and 11 selected two classrooms at each grade level from two through eight. One classroom in each pair was randomly assigned to receive instruction in test-taking skills using Random House's Scoring High materials. The remaining classroom in each pair was assigned in a random manner to one of four other groups: Riverside (Improving Test-Taking Skills), Continental Press (On Target for Tests), Hammond (Reading Skills for Standardized Testing) or comparison (no formal testwiseness instruction).

Students were instructed in test-taking skills during the six to eight weeks immediately preceeding the regular Chicago Public Schools citywide testing program. To answer the evaluation questions, data were collected on participating students' achievement gains in reading comprehension, knowledge of test-taking strategies, and test anxiety. The Reading Comprehension Subtest of the Iowa Tests of Basic Skills (ITBS) was used to determine if instruction improved performance on standardized exams. The Test-Taking Survey and the Test Anxiety Survey were developed to ascertain students' knowledge and attitudes in these areas. A Teacher Survey documented how and when the materials on test-taking skills were being used and gathered students' and teachers' reactions to the materials.

Teachers responding to the Teacher Survey were generally pleased with the testwiseness materials they used. Most thought students enjoyed the work, too, as long as the curriculum level correctly matched the students' ability level. Examination of teachers' responses indicated that the treatment, instruction in test-taking skills, varied considerably from classroom to classroom. Some classes spent more time than others on testwiseness instruction. Some teachers used additional materials such as old copies of the ITBS along with the assigned curriculum. The most damaging finding to the validity of this design, however, was that some teachers in the comparison

group instructed their students in test-taking skills. In most cases instruction was only personal suggestions and hints, but in a few instances, commercial test-preparation packages were used. Almost all responding teachers (86% or more of each vendor group except one) indicated they would recommend their assigned materials to other teachers. They thought testwiseness instruction would help students do better on standardized tests by familiarizing them with testing format, by alerting them to tricks of test-taking, and by giving them a sense of confidence.

The Test-Taking Survey, administered as a pre- and posttest to a random sample of participating fifth through eighth graders, measured students' gain in knowledge of test-taking skills. Students in both the treatment and comparison groups exhibited greater testwiseness on the posttest. Differences between the groups were not large enough or consistent enough to conclude that direct instruction in test-taking strategies increased knowledge of better test-taking practices.

A random sample of participating fifth through eighth graders responded to the Test Anxiety Survey shortly after taking the ITBS. Results suggested a modest improvement in students' attitudes toward testing after training in how to take tests. When students' responses were examined by the various publishers' materials used, the least anxious attitude was almost always exhibited by one of the treatment groups.

Examination of students' gains in reading achievement, as measured by the Reading Comprehension Subtest of the ITBS, indicated very minor, if any, effects attributable to training in test-taking strategies. At each grade level, both the treatment and comparison groups performed equally well on the ITBS pretest (spring 1985). Both gained about the same amount (from spring 1985 to spring 1985) at each grade level, too. At every grade level but one, the comparison group gained the same or more than the treatment group. when the achievement data is broken down by the different vendor groups, no patterns emerge. While there is some variability in achievement gains by vendor group, analyses show school and grade are more important determinants.

This study failed to find any decisive differences between students who received commercially prepared instruction in test-taking strategies and those who did not. Both groups appeared to gain increased awareness of test-taking strategies even though, ostensibly, only one group received planned instruction in these skills. This finding suggests consistent implementation did not occur as intended. In fact, several teachers in the comparison group said they provided testwiseness instruction of some kind for their students.

The comparison group did not function as a valid control group in this pilot. Because of this, a comparison of 1985 and 1986 reading achievement scores on the ITBS for the treatment group, the comparison group, and the remaining students in the participating schools was done. It yielded surprising results. While all three groups performed similarly on the spring 1985 Reading Comprehension Subtest of the ITBS, the reading comprehension gain scores for the treatment and comparison groups were substantially higher than the gain scores of the non-participating (no-vendor) group. This may be due to comparison teachers not wanting their students to fall behind, or it may be

an example of the Hawthorne effect - just identifying students for a special project enabled them to perform better.

In any case, based on the results of this study, no recommendation can be made for school systems to purchase these packaged instructional programs in test-taking strategies. The packages did not produce results that were superior to whatever informal testwiseness training teachers were already providing. It would be helpful (although impractical) to repeat this study with students who have never received instruction in how to take tests. This, along with more stringent controls on how and when the materials are used and prohibiting any testwiseness instruction other than what is assigned, would permit more definitive conclusions. This pilot study strongly suggests that instructional time be spent directly in the content area involved, and if test-taking strategies are needed, suggestions from teachers during the regular course of instruction and possibly practice with other standardized tests may promote increased achievement equally as well as expensive commercial courses.

Introduction

Optimum performance on standardized tests has become increasingly important in education. Test results are used to make decisions about an individual's ability, a person's degree of skill mastery, and a program's effectiveness. "To the degree that achievement tests measure test-taking skills rather than knowledge of content, decisions about placement, programming, and evaluation may be incorrect" (Scruggs, White, and Bennion, 1986).

It has been suggested by educators that instruction in specific test-taking skills such as educated guessing, time usage, recognition of context clues, and elimination of inappropriate answer choices would enable students to make the most of their abilities and increase the accuracy of test measurements (Ford, 1973; Fuego, 1977; Taylor & White, 1982). Research regarding the effectiveness of such training, however, is inconclusive.

Some educators question whether cognitive strategies to increase testwiseness can be taught and utilized by students to improve multiple-choice achievement test scores. A 1985 study on testwiseness supported the first premise but was tenuous regarding the second (Dolly & Williams, 1985). Only when the exam contained items susceptible to testwiseness strategies were experimental subjects able to outperform the controls. On adequate studies, a recent meta-analysis also suggested that skills in test-taking can be taught (Scruggs, White, & Bennion, 1986).

Laboratory investigations have demonstrated that high levels of test anxiety can prevent individuals from doing their best in evaluative situations. (Paulman & Kennelly, 1984). Some educators theorize that instruction in test-taking strategies will increase test scores by reducing the debilitating effects of test anxiety. Smith (1982) implies that improving a test-taker's confidence may be the most important factor in improving test scores.

Understandably, educators need to know the magnitude of the effects of a testwiseness program on these variables and especially on achievement if they are to justify taking valuable time from content areas to work on test-taking skills. Also, if testwiseness is to be taught, are some types of training more effective than others? Are one publisher's materials superior to another's, can teachers provide the necessary tips and hints without benefit of a commercial curriculum, and how much time should be devoted to teaching these strategies?

Purpose

In the fall of 1985, a representative from the Random House Publishing Company approached the General Superintendent about using Scoring High (a commercial test-preparation package) in selected classrooms. Random House agreed to donate materials for one classroom at each grade level (second through eighth) for every school in two city districts. District Guidance Coordinators assisted in arranging inservice training for local school

counselors and acted as a liaison between schools and the central office, but, lacking a principal leader, project management became the responsibility of the Department of Research and Evaluation. The purpose of this report is to examine the effects of direct instruction in test-taking strategies. The three objectives of the evaluation are:

1. to determine if formal training increased students' test-taking skills,

2. to assess whether students were able to generalize the testwiseness strategies so they could improve their scores on standardized exams, and

3. to determine whether increased knowledge of how to take tests reduced students' anxiety.

In addition, the study was designed to look at the possibly differential effects of other commercial test preparation packages and variations in instructional time. Other publishing companies were invited to donate instructional materials for increasing test-taking skills.

Procedure

Forty-one schools in two Chicago Public School districts participated in the project. Approximately 12,000 students from 475 classes were involved. Two classrooms at each grade level, from two through eight, were selected by the school principals. One classroom in each pair was randomly assigned to receive direct instruction in test-taking skills using Random House's Scoring High materials. The remaining classroom in each pair was randomly assigned to one of four other groups: Riverside (Improving Test-Taking Skills), Continental Press (On Target for Test), Hammond (Reading Skills for Standardized Testing) or comparison. The comparison group was assigned no formal testwiseness instruction.

School counselors received inservice training in the use of these materials by the publisher. The counselors were responsible for training the classroom teachers. In general, instruction in test-taking strategies took place in the selected classrooms three to five times per week for six to eight weeks prior to administration of the Iowa Tests of Basic Skills (ITBS). Local principals, individual teachers, and external considerations occasionally modified these guidelines. Any deviations were monitored through the Teacher Questionnaire and major differences were considered in interpreting the achievement results.

The skills covered in the program were: following test directions, using time wisely, and using analytical skills in reading and language. The Random House (Scoring High) and Riverside (Improving Test-Taking Skills) curricula contained more practice exercises and were more comprehensive than Hammond or Continental Press.

Data were collected on participating students' achievement gains in reading comprehension, their test-taking abilities, and their levels of test

anxiety. The Reading Comprehension Test of the Iowa Tests of Basic Skills (ITBS) was used to determine if instruction improved performance on standardized exams. Grade equivalent scores on the Reading Comprehension Subtest were used as a record of achievement gains.

Instruments developed to answer the other evaluation questions included a Test-Taking Survey, a Test Anxiety Survey, and a Teacher Questionnaire. Millman's taxonomy of testwiseness (Millman, et al., 1965) was used as a framework for developing an instrument to measure students' test-taking abilities. The Test-Taking Survey covered time-use, error-avoidance, and guessing strategies, attitudes toward testing, and direction-following techniques. Students were asked to respond "yes" or "no" to twenty-five statements about how they think they perform when taking a multiple choice test.

The Test Anxiety Survey examined students' attitudes toward testing situations. Students responded to twenty items on a four-point-scale from "almost never" to "almost always." The Teacher Survey was developed to document how and when the materials on test-taking skills were being used, their ease of use, and the responses of students and teachers to the materials.

All students took the ITBS as part of the annual Chicago Public Schools testing program. The Test-Taking Survey was administered as a pre- and posttest to a random sample of the population (51 classrooms). The Test Anxiety Survey was given once, during the week of the citywide testing, to a random sample (49 classrooms). All treatment groups were represented in the samples responding to each survey. Only fifth through eighth graders were targeted for the Test-Taking Survey and the Test Anxiety Survey. Teacher Questionnaires were returned by about 70% of the treatment teachers.

Results

Teachers' Responses

The Teacher Questionnaire was distributed to gather information about the materials teachers used to increase students' test-taking skills, how they were used, and whether they were considered worthwhile. Many treatment teachers did not rely on the assigned testwiseness curriculum alone. More than half included personal suggestions; a few permitted practice with old tests; and, except for Hammond teachers, fifty percent or more used other published materials. Some teachers in the comparison group instructed their students in test-taking strategies through personal hints, published materials, and old forms of standardized tests. While the instruction of testwiseness techniques other than the assigned ones introduces a contaminant into the evaluation, it is understandable since teachers are interested in giving their students every possible advantage for success. Examination of other published materials teachers said they used revealed that while some taught testwiseness techniques (Millikin's Test-Taking Tips Plus Practice and McGraw Hill's Instructo), most were really using reading curriculums (Weekly Reader Diagnostic Reading and Chicago's Mastery Learning in Reading). The

important finding, however, is that the treatment within each vendor group was not the same.

All treatment groups spent approximately the same number of minutes per day (35) and days per week (4) on testwiseness instruction. There was more variability though in the number of weeks of instruction. Random House teachers spent the most time on direct instruction, Hammond teachers the least. Because Hammond and Continental materials are not as extensive as the others, less time may have been needed for completion. Some Riverside classes had fewer weeks to cover the materials because of delays in receiving them. More than 85% of the teachers in each group instructed the class as a whole in test-taking strategies. Individual or small group instruction and students working independently occurred in a few classrooms.

A major concern in implementing testwise instruction was finding time for it. What other lessons could be curtailed or eliminated to make time for testwiseness? Responses to the Teacher Questionnaire indicate that almost every time slot was used at least occasionally. Reading and language art periods were the most frequent casualties.

Issues concerning teacher training and ease of use are shown in Table 1. About 70 percent of the Random House respondents felt their training was adequate. A comparable percent of Riverside teachers agreed. About 60% of Continental teachers were satisfied with the amount of training they received. In sharp contrast, only 11% of Hammond teachers felt the training was adequate and over half of them said there had been no training. This may be because Hammond teachers did not attend the inservice training or because, as one teacher reported, the Hammond vendor who attended the inservice meeting "did not seem familiar with the Chicago pilot program."

Table 1
Teacher Survey

Percentage of Teachers Responding "Yes" to
Ease of Use and Value

	Item	Random House N=185	River-side N=26	Conti-nental N=23	Hammond N=9
9	Easy for students to use	74	71	77	62
10	Students liked materials	71	60	71	62
	Students were bored	6	16	10	12
	Students were indifferent	14	20	14	25
	Students were frustrated	9	4	5	0
11	Easy for teacher to use	97	100	95	100
12	Inservice training was adequate	72	69	56	11
	No training received	20	27	13	56
13	No preparation needed to teach	15	15	26	11
	A little preperation required	81	69	61	67
14	Clear directions for use	97	92	100	88
15	Very helpful for students	29	32	19	29
	Helpful	64	36	62	57
	Not useful	4	20	14	0
	A waste of time	2	12	5	14
16	Better than other materials	29	35	17	11
	About the same as others	34	8	13	11
	Not as good as others	2	8	17	22
	Never used any previously	35	46	44	44
17	Recommend to other teachers	94	67	86	100
18	Teach even if no materials	87	83	95	88

Virtually all teachers felt the materials were easy to use and needed little preparation time. In fact, on the open-ended questions soliciting reasons why they liked the materials, many teachers in every group cited amount of personal preparation time as a major consideration.

Teachers were hesitant about making predictions on the value of testwise instruction for their students. Several indicated they were waiting for the ITBS results. Of the 236 teachers responding to this question, the majority (211) thought the testwiseness instruction was helpful for students. Random House users were the most positive on this point. When asked to compare the material they were using with materials used in the past, approximately one-third of the Random House and Riverside teachers claimed their materials were better than any they had previously used. Less than 20% of the Continental

and Hammond teachers felt that way. Finally, responding teachers indicated they would recommend the material to other teachers. Users of Hammond and Random House were particularly enthusiastic about spreading the word. For Hammond teachers, this was inconsistent with the number who thought their materials were not as good as ones previously used. Only 67% of Riverside teachers stated they would recommend Improving Test-Taking Skills to other teachers. Two possible explanations for this are the problems incurred with timely delivery of the booklets and teachers' expressed dissatisfaction with answers being readily available in students' test booklets.

Teachers were asked about the utility of the assigned testwiseness materials. Overall, teachers appreciated the tips, explanations, the ease of use, and the appropriateness of the subject matter to the ITBS. In addition, Random House was noted for holding interest and its generous number of exercises.

A limitation expressed by the teachers about the vendors' materials, but particularly by Hammond and Continental Press users, was not enough practice exercises. Other common concerns were the time lost from regular instruction in order to include test-taking strategies and the lessons became boring after a while.

Random House users complained that the vocabulary was too difficult. Riverside users reported that answers in students' books were a big disadvantage. It was too easy for lazy students to copy answers rather than read the questions and decide for themselves. Continental Press and Hammond users indicated the material was too easy and too few practice exercises were provided.

In responding to the Teacher Survey, several teachers across publishers expressed concern about matching the level of testwiseness curriculum with the reading level of the student-users. Where mismatches occurred, students easily became bored or frustrated in the use of the materials.

In summary, teachers responding to the questionnaire were generally pleased with the materials. Most felt the students enjoyed using them, as long as the level correctly matched the students' ability level. A majority of teachers indicated such instruction would help students do their best on standardized tests by familiarizing them with testing format, by alerting them to "tricks" of test-taking, and by giving them a sense of confidence.

Knowledge of Test-Taking Skills

The Test-Taking Survey was administered as a pretest and a posttest to students in a random sample of fifth through eighth grade classrooms in the participating schools. Approximately 1400 students responded to the pretest in January 1986 and again four months later to the posttest.

Table 2 shows the gains students made in knowledge of test-taking skills. The table gives the percentage of students who said "yes" to the positively directed segments and "no" to the negatively directed ones. A negatively directed statement has been stated in such a manner that the response illustrating knowledge of a test-taking skill is "no". The treatment group

Table 2
Test-Taking Survey

Percentage Change in Student's Responses from Pretest to Posttest

	Treatment Group Gain	Comparison Group Gain
1. Rule out wrong answers	1.9	6.1
2. Look for key words	1.4	3.7
3. Take as much time as need	17.5	19.6
4. Do better if very nervous	-1.5	5.5
5. Read only to right answer	0.8	2.6
6. Choose last answer	2.4	3.0
7. Choose any answer if don't know	-4.8	-6.4
8. Get help from other questions	1.7	-0.7
9. Answer in order listed	3.5	1.4
10. Check that marks are dark	2.4	-0.8
11. Choose longest answer	2.1	-0.1
12. Read directions carefully	0.0	0.4
13. Do easy ones first	-3.3	-5.9
14. Mark two answers	0.9	-2.2
15. Look at how word used	1.0	-4.1
16. Read questions before story	22.3	3.8
17. Ask if don't understand directions	0.0	3.1
18. Erase stray marks	2.4	0.3
19. Guess rather than leave blank	10.0	7.0
20. Feel nervous about tests	2.2	6.2
21. Ask if don't understand example	1.2	-0.8
22. Find main idea	-0.2	-1.5
23. Mark questions to go back to	-0.1	0.0
24. Skip directions	3.2	5.2
25. Read each answer	0.0	-0.2
Overall	2.7	1.8

scored higher in testwiseness knowledge on 17 of the 25 items. The students in the comparison group scored higher on 14. On three of the items the treatment students' gains were 10% or more. Only on one of these statements was the comparison students' gains that high. Both treatment and comparison groups were considerably more aware on the posttest of not spending too much time on any one question (Item 3). The biggest difference between the two groups occurred on Item 16. Students who received instruction in test-taking skills said they would read the questions about a passage before reading the passage. This difference is a prime strategy of the largest group, Random House users. Examination of the responses by vendor group show approximately 28% more Random House students answered "yes" on the posttest to Item 16 compared to about 15% more for Riverside users, and 2 to 4% more for the other groups. There are no studies yet to establish whether this particular practice increases test scores.

Responses to the Test-Taking Survey were also analyzed by vendor group. For convenience in recognizing patterns, the statements are divided into six categories: following directions, recognizing tricks, using key words, guessing strategies, time usage, and attitudes. In following directions and using answer sheets, all groups except Hammond exhibited more test-taking knowledge than the comparison group. In reviewing the instructional manuals, the Continental Press coverage was the most extensive in this area and Random House, the weakest.

According to results on the Test-Taking Survey, the comparison group learned about as much as the treatment groups about using clues. Hammond curriculum users exhibited more knowledge of hints to increase scores on standardized tests including reading every answer and being aware that professional test-makers have minimized the use of clues such as putting the right answer last or making it the longest choice. Writers of the Hammond curriculum covered these hints but Continental Press materials stressed them.

There were also some differences between the groups on the use of key words and context clues. Students in the Continental Press group performed slightly better than the others; Hammond users did not do quite as well. Hammond's Reading Skills for Standardized Testing didn't cover key words, etc.

Students receiving Random House instruction increased their knowledge of guessing strategies more than students in other groups and Continental Press students did less well possibly because their materials covered guessing strategies only for the upper two grade levels.

Although efficient use of time was an important focus in each of the instructional packages, Hammond and Random House users made greater gains on time issues than students in the other groups. Random House users made sizable gains in use of time due to increases in the number of students who say they read the questions before reading the passage. As mentioned previously, there is insufficient data to judge the soundness of this strategy for improving test scores.

Hammond students expressed a more positive change in attitude following instruction than the other groups. Random House and Riverside users indicated

they were slightly more nervous about taking tests. These, however, were only two of twenty items on the Test-Taking Survey measuring attitudes.

On the whole, results on the Test-Taking Survey tend to confirm earlier studies which indicate direct instruction in test-taking strategies appears to increase knowledge of better test-taking practices. The relationship is far from clear-cut, however. This may be because one of the pertinent variables not controlled in this study is prior instruction in test-taking skills. If this were a significant factor, one would expect greater gains among the younger students because of less previous exposure to test-taking strategies but this theory is not supported when the data are analyzed by grade.

Test Anxiety Survey

The Test Anxiety Survey was administered to a sample of participating classrooms shortly after the students completed the spring 1986 ITBS. Table 3 illustrates the percent differences on each of the survey items between the students who received formal instruction in testwiseness strategies and those who did not. There seems to be modest improvement in students' attitudes toward testing after training in test-taking skills. The largest differences between the treatment and comparison groups were on Statements 4, 13, and 20. Number 13 states "I learn to take tests at school." Items 4 and 20 indicate a positive attitude toward being able to do your best on tests. These results support what the teachers reported -- testwiseness instruction seemed to help children feel more confident about taking tests -- and confirm the research findings cited earlier about the impact of testwiseness instruction on test anxiety.

When the responses were examined by the various publishers' materials used, the most positive attitude toward tests was almost always exhibited by one of the treatment groups. Hammond students appeared the most confident. Continental Press and Hammond materials focus more on general test-taking techniques while Random House and Riverside materials emphasize academic skills more. Further studies will have to be conducted to ascertain precisely what types of instruction contribute most to decreasing test anxiety.

Achievement

Each spring the Chicago Public Schools administers the Iowa Tests of Basic Skills (ITBS) to all first through eighth grade students. Reading comprehension grade equivalent scores on the ITBS were used to determine if students were able to generalize test-taking skills to improve their performance on standardized tests.

Tables 4 through 7 summarize the achievement results. Figures 1 through 4 show this same information in graphic form.

Table 4 and Figure 1 compare the ITBS reading comprehension scores of students who received instruction with the comparison group. Both groups performed almost exactly the same on the pretest. The largest differences occur at fifth and sixth grade where the groups are .29 years and .14 years apart respectively. The differences were not statistically significant.

Table 3

Test Anxiety Survey

Percentage of Treatment and Comparison Students
Who Answered "Almost Always" and Differences Between Groups

	Treatment Group N=990	Comparison Group N=277	Difference *
1. Look forward to tests	17.4	16.7	0.7
3. My mind wanders	8.2	11.0	-2.8
3. Forget what I usually know	7.0	8.4	-1.4
4. Think positively	52.3	43.8	8.5
5. Time pressure, do worse	10.8	12.0	-1.2
6. Little nervous, do better	8.6	8.0	0.6
7. Think about failing	19.7	18.5	1.2
8. Get upset during tests	6.8	8.7	-1.9
9. More important, do better	26.3	21.8	4.5
10. Feel confident	17.9	14.3	3.6
11. Mind goes blank	13.1	12.1	1.0
12. So nervous I forget	7.8	6.6	1.2
13. Learn to take tests	63.2	55.2	8.0
14. Wish I didn't get so nervous	31.5	28.9	2.6
15. Get upset - can't do first few	7.6	8.8	-1.2
16. Like taking tests	41.0	40.1	0.9
17. Read without understanding	34.8	34.4	0.4
18. Feel nervous even if prepared	15.7	17.0	-1.3
19. Forget to be nervous later	25.5	28.3	-2.8
20. Do the best I can	68.9	61.2	7.7

* Difference is expressed as a positive value if the treatment group's answers expressed a more positive attitude towards tests and as a negative value if the comparison group 's answers expressed more confidence.

Table 4

Reading Achievement Pretest Scores for Treatment and Comparison Groups

Grade Equivalent Means, Standard Error and Sample Size

Grade	3	4	5	6	7	8
Treatment	2.50	3.43	4.27	5.02	6.14	7.12
SE=	.02	.02	.03	.04	.04	.04
N=	1269	1489	1407	1308	1279	1263
Comparison	2.54	3.33	3.98	5.16	6.08	7.12
SE=	.04	.06	.06	.08	.08	.08
N=	518	367	381	318	395	399

Figure 1

Mean Grade Equivalent Pretest Scores on the ITBS Reading Comprehension Test for Treatment and Comparison Groups by Grade

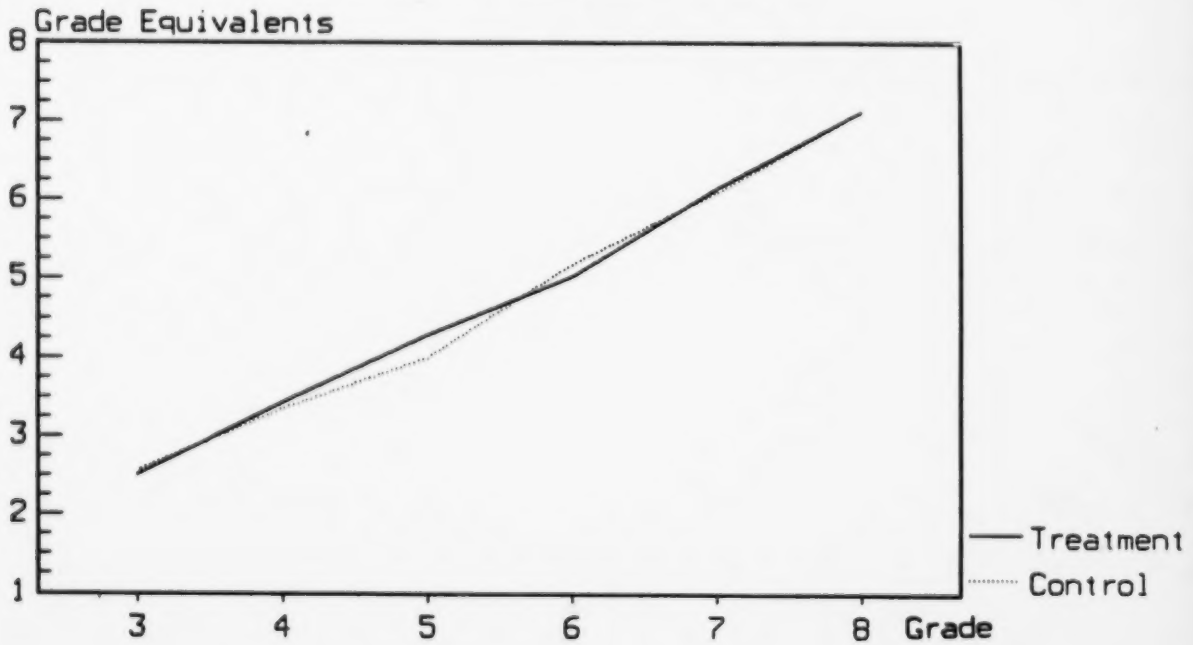


Table 5 (Figure 2) presents the reading grade equivalent gain scores for the two groups. At fifth grade, the treatment group gained more than the control group (.04 years). Both groups gained approximately the same amount at third grade. At every other grade level, the comparison group outperformed the students who received testwiseness instruction with the largest difference occurring at eighth grade. None of the differences is statistically significant.

In Table 6 and Figure 3, the mean grade equivalent pretest scores in reading comprehension are given for each vendor by grade. Second graders were omitted from the analysis because of the small cell size for some vendors, zero in one case. The biggest spreads again occur at fifth and sixth grades where the range between the groups is .44 years and .65 years respectively.

Table 7 and Figure 4 present the mean grade equivalent reading gain scores made by each group from third through eighth grade. The differences range from .11 years at sixth grade to .39 years at fifth and eighth grades. The Hammond students' gain scores are the most erratic, probably due to teacher effects since these cells have only 30 to 70 students. If the Hammond outliers are eliminated, the largest difference in gain scores is .20 years. This difference occurs at seventh grade between the Random House students and the users of Continental Press curriculum.

Table 5

Reading Achievement Gain Scores for Treatment and Comparison Groups

Mean Grade Equivalent Gain Scores and Standard Error

Grade	3	4	5	6	7	8
Treatment	.93	.81	1.07	1.07	1.06	.95
SE=	(.02)	(.02)	(.02)	(.03)	(.03)	(.03)
Comparison	.93	.85	1.03	1.11	1.08	1.03
SE=	(.03)	(.04)	(.04)	(.05)	(.05)	(.05)

Figure 2

Mean Grade Equivalent Gain Scores on the ITBS Reading Comprehension Test for Treatment and Comparison Groups by Grade

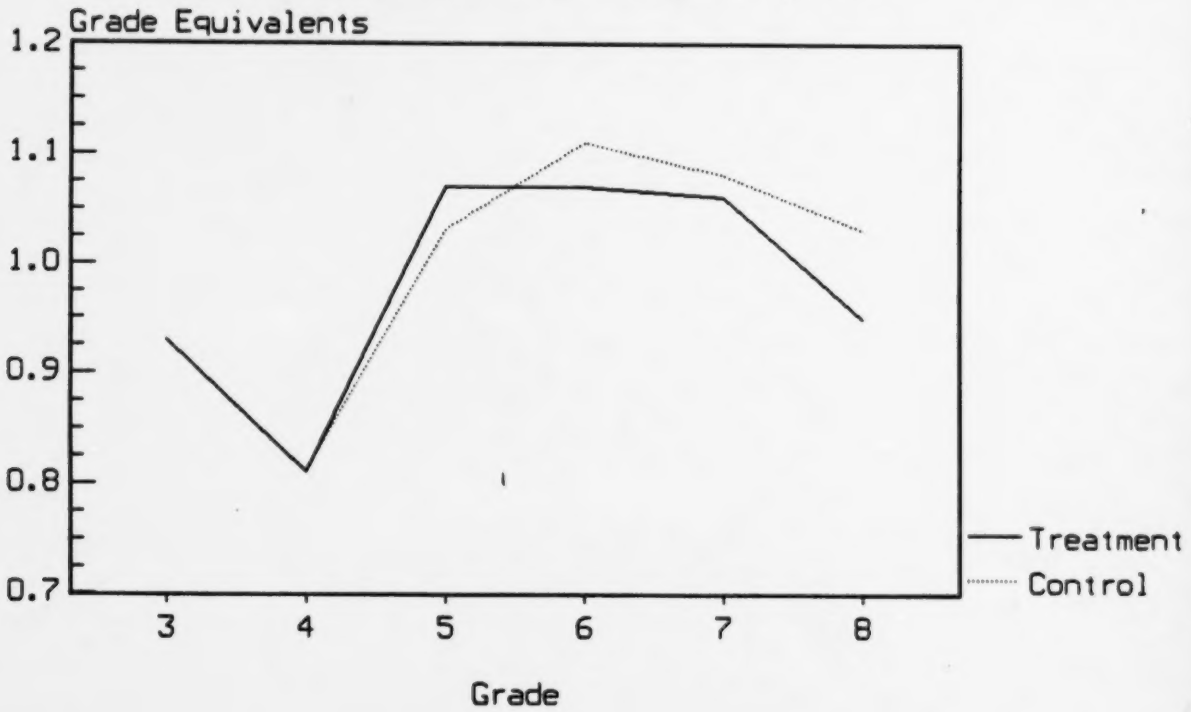


Table 6
Reading Achievement Pretest Scores by Grade and Vendor

Grade Equivalent Mean, Standard Error and Sample Size

Grade	Random House	Riverside	Continental	Hammond	Comparison
3	2.49	2.21	2.69	2.47	2.54
	.03	.10	.08	.08	.04
	986	86	160	37	518
4	3.44	3.69	3.20	3.01	3.33
	.03	.07	.08	.09	.06
	1091	188	142	68	367
5	4.28	4.42	4.03	4.20	3.98
	.04	.10	.10	.12	.06
	1113	131	123	40	381
6	5.08	5.04	4.56	4.51	5.16
	.04	.08	.09	.22	.08
	925	255	96	32	318
7	6.15	6.28	5.82	5.91	6.08
	.05	.12	.17	.14	.08
	997	172	50	60	395
8	7.09	7.19	7.30	6.85	7.12
	.05	.12	.15	.20	.08
	957	172	101	33	399

Figure 3

Mean Grade Equivalent Pretest Scores on the ITBS Reading Comprehension Test by Grade and Vendor

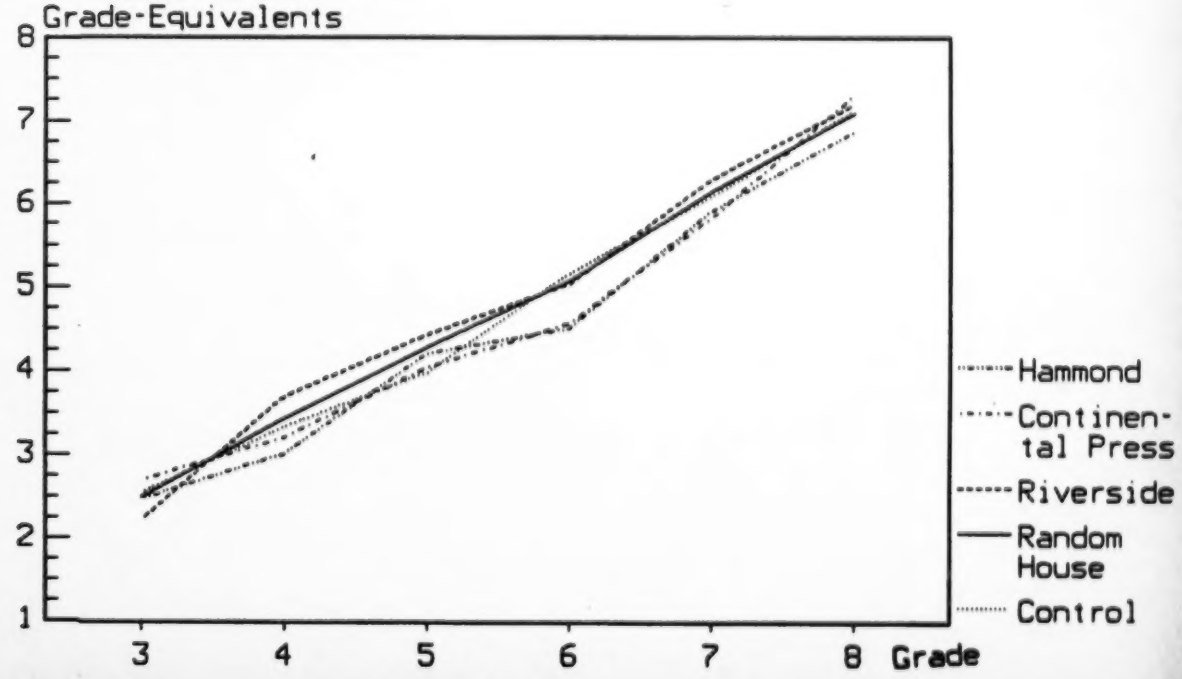


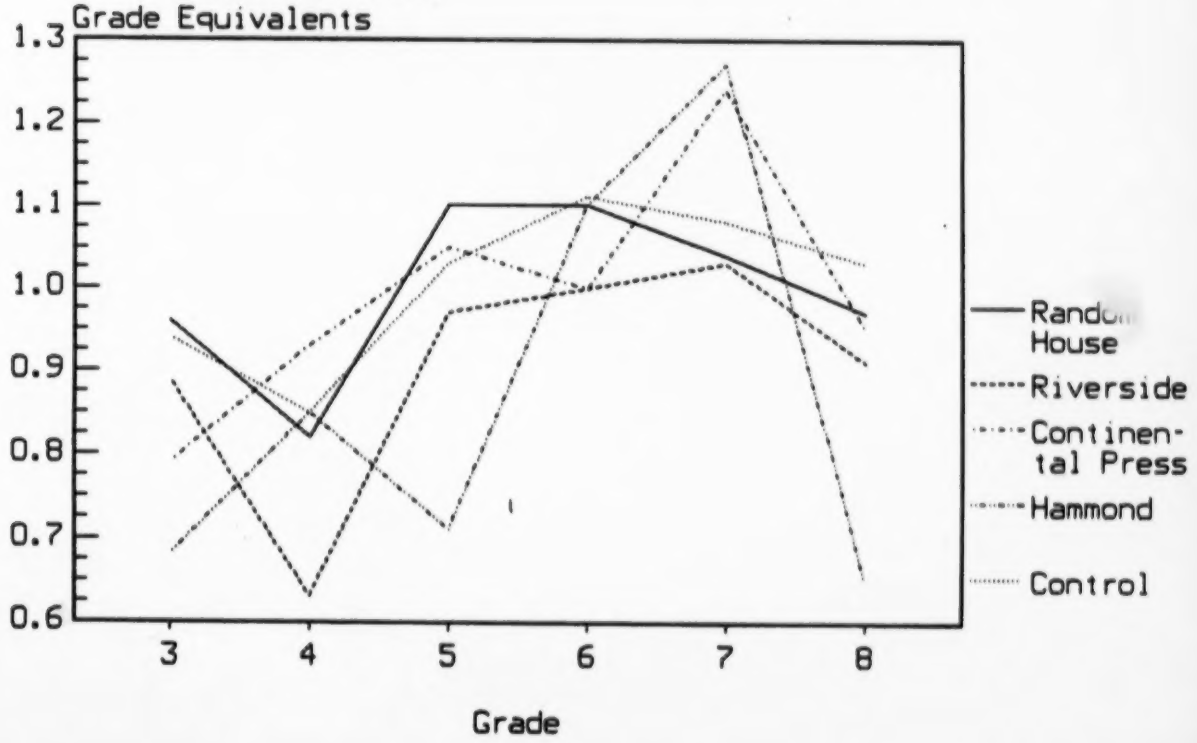
Table 7
Reading Achievement Gain Scores by Grade and Vendor

Mean Grade Equivalent Gain Scores and Standard Error

Grade	Random House	Riverside	Continental	Hammond	Comparison
3	.96 (.02)	.89 (.09)	.79 (.07)	.68 (.12)	.94 (.03)
4	.82 (.02)	.63 (.05)	.93 (.06)	.85 (.08)	.85 (.04)
5	1.10 (.02)	.97 (.07)	1.05 (.08)	.71 (.13)	1.03 (.04)
6	1.10 (.03)	1.00 (.06)	1.00 (.10)	1.10 (.16)	1.11 (.05)
7	1.04 (.03)	1.03 (.07)	1.24 (.14)	1.27 (.11)	1.08 (.05)
8	.65 (.03)	.91 (.07)	.95 (.10)	.95 (.20)	1.03 (.05)

Figure 4

Mean Grade Equivalent Gain Scores on the ITBS Reading Comprehension Test by Grade and Vendor



Two questions occurred when variations in treatment were noted. One was whether length of instructional time in test-taking skills was correlated with achievement gain. It was not. The other was if the types of treatment as reported by teachers were related to achievement gain. Upon examination, no patterns emerged.

It seems that testwiseness instruction is not as much a factor in raising achievement scores as are other variables not considered here. The treatment and comparison groups made similar gains in reading comprehension on the ITBS. While there is some variability in achievement gains for the vendors, analyses show school and grade are more important determinants.

Conclusions

This study failed to find any decisive differences between students who received commercially prepared instruction in test-taking strategies and those who did not. Both groups appeared to gain increased awareness of test-taking strategies even though ostensibly one group did not receive planned instruction in same. Only in time-use strategies were students in the two groups noticeably different. One possible question is: Did implementation take place as intended? Normally, one would expect the group who received instruction in a subject area to learn more about the domain than a group who didn't have this instruction. The two measures to monitor implementation, classroom observations and the Teacher Questionnaire, shed some light on the process. Observations indicated that testwiseness instruction was occurring in treatment group classrooms. There were no observations of comparison classrooms. Responses to the Teacher Questionnaire indicated that some comparison students did receive testwiseness instruction. Comparison teachers responding to the questionnaire said they gave students suggestions and instructions which they felt would help students do better on the ITBS.

Understandably these circumstances, although unavoidable in a school system, seriously contaminated the study. In addition, there was no practical way to control for prior testwiseness instruction. Students could have received testwiseness instruction, direct and/or indirect, in any previous school year. One could argue, however, that if one group had significantly more knowledge of test-taking strategies than another, the more knowledgeable group would have performed better on the Test-Taking Survey pretest or at least that knowledge would have enabled them to have scored higher on the ITBS pretest. Neither happened.

Although gains in knowledge of test-taking strategies were about the same for both groups, students in the treatment groups seemed to approach the city-wide testing with a little more confidence than students in the comparison group. The differences were slight, however, and did not seem to translate into better performance on the ITBS.

The expected results--increased knowledge of test-taking skills and decreased levels of test anxiety for the treatment group--did not appear. It is, therefore, not surprising to find no greater gains in reading achievement by the treatment students. Both groups began at roughly the same level on their pretest scores on the reading comprehension subtest of the ITBS. The

comparison group students gained as much or perhaps a little more than students who received testwiseness instruction.

While preparing this report, another comparison revealed an unanticipated situation. Initially, two classrooms per grade at each school were nominated to participate. From this group, the classrooms were assigned to the five groups, Random House, Riverside, Continental Press, Hammond, and comparison. At most of these schools, 33 of the 41, classrooms remained who were not part of the study in any way. Since all Chicago Public School students' ITBS scores are on the computer tape, we plotted the pretest and gain scores of the students who had no assigned group. Figures 5 and 6 compare the treatment group, the comparison group, and the students at the same schools who were not involved in any way (the no-vendor group). The three groups were essentially equivalent on the pretest measure even though the no-vendor group was slightly lower than the comparison group in the upper grades (Figure 5). On the posttest, an unexpected phenomenon occurred. The comparison group outperformed the no-vendor group at every grade level (Figure 6). The differences in gain scores ranged from .08 years gain at grade four to .26 years at sixth grade. These are substantially bigger differences than occurred between the comparison group and any other vendor group.

Possible explanations may be that principals nominated only their best teachers for the project or students in the uninvolved classrooms had different ability levels than students placed in the participating comparison group. A third explanation is that teachers in comparison classrooms gave testwiseness instruction to their students in an attempt to compensate for the lack of a commercial test preparation package. One other possibility is that a Hawthorne effect is operating such that just identifying students for a special project enables them to perform better on achievement tests.

The first hypothesis seems unlikely in that all or most of the 41 principals would be trying to help students succeed on their achievement tests, and therefore, be more likely to involve students whose teachers might provide less help. The second theory is not supported by the pretest scores which show all groups beginning at about the same place. A clear decision about the third hypothesis can not be made based on the available evidence. Results of the Test-Taking Survey indicate that the comparison group did learn about test-taking skills; at least they learned as much as the treatment students did. According to teacher reports, however, more direct testwiseness instruction was occurring in the treatment classrooms. There is no data to support or refute the fourth explanation. Further examination might suggest other interpretations.

Figure 5

Mean Grade Equivalent Pretest Scores on
the ITBS Reading Comprehension Test for
Treatment, Comparison, and No-Vendor Groups

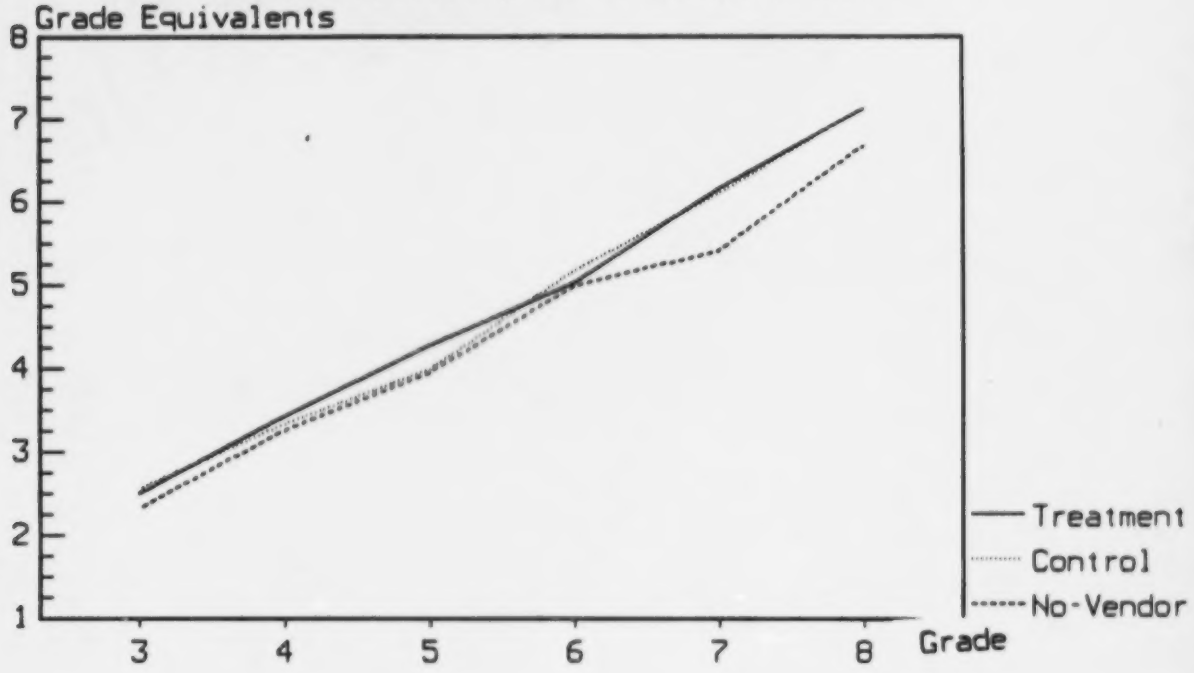
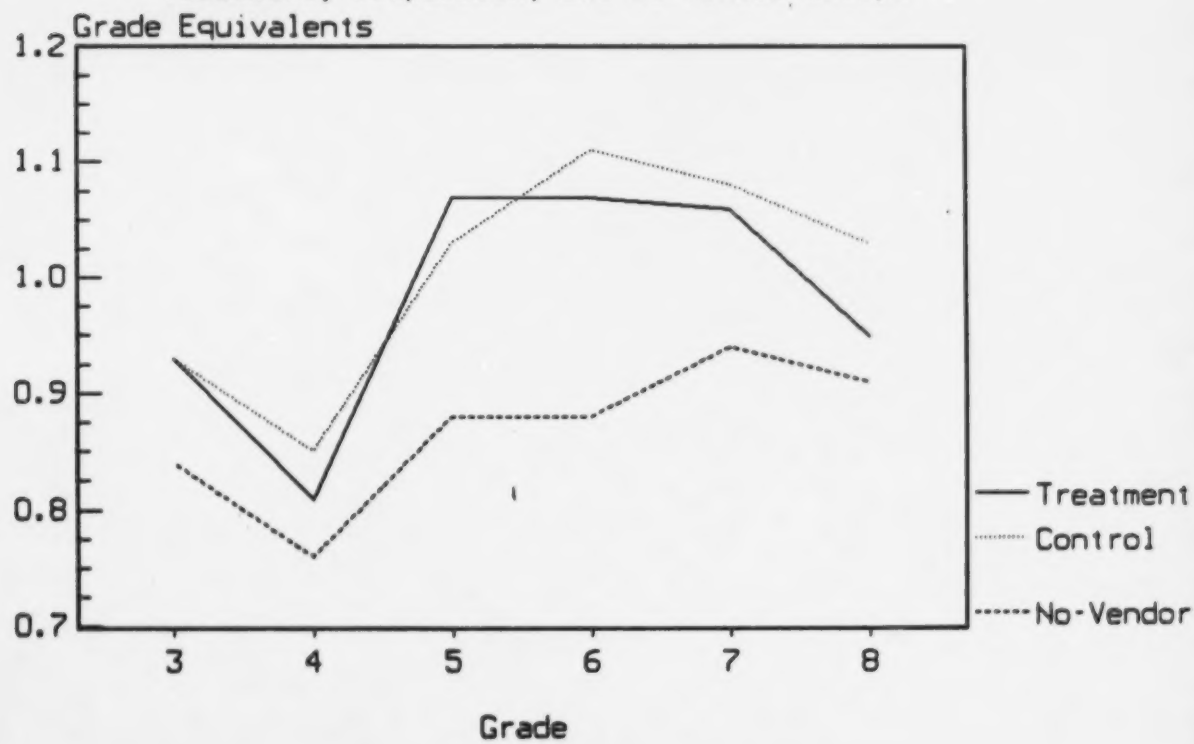


Figure 6

Mean Grade Equivalent Gain Scores on
the ITBS Reading Comprehension Test for
Treatment, Comparison, and No-Vendor Groups



Recommendations

Based on the results of this study, no recommendation can be made for school systems to purchase packaged instrucitonal programs to teach test-taking strategies. The packages did not produce results that were superior to whatever informal testwiseness training was already in place. If such commercial materials are available at no cost, however, teachers may want to use them. Testwiseness instruction did not harm students. Direct instruction did not increase anxiety nor adversely affect achievement. Although slight achievement gain differences were noted depending on the materials used, further studies will have to be conducted to determine what curriculum characteristics are the most successful. Of the four packages used in this study, Random House's Scoring High and Riverside's Improving Test-Taking Skills seemed comparable to one another in comprehensiveness while the Hammond and Continental Press materials seemed more alike. The latter two did not provide the depth of coverage and number of practice exercises that the former two did. While teachers were critical of this lack of practice exercises, the shortage was not reflected in lower achievement gains.

It would be helpful although impractical to repeat this study with students who have never received instruction in how to take tests. This, along with more stringent controls on how and when the materials are used, and prohibition of any instruction other than what is assigned would go a long way toward enhancing the reliability and validity of the results. Further research in any case is needed to be able to say with certainty the effectiveness of testwiseness instruction on achievement.

This pilot, however, suggests that instructional time be spent directly on the content area involved. There is some indication that if test-taking strategies are taught, suggestions from teachers during the regular course of instruction and possibly practice with other standardized tests promotes increased achievement equally as well as expensive packaged materials. The curriculum packages used in this study did not seem to do the job well enough to justify more wide-spread use.

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